MANAGERIAL BUDGETING IN THE DEVELOPMENT OF WEAPONS SYSTEMS

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PREFACE

This paper is concerned with budgeting as a tool of management in the development of weapon systems. It will attempt to emphasize not the details of accounting techniques but the essentials of the management function and the role of budgeting as a means to these ends. For this purpose the principles, practices, and basic concepts which constitute the budgeting process in the development of weapon systems will be examined with the hope that some guidelines can be developed for use by management.

The author has drawn upon his own experience and knowledge in the weapon systems development industry as well as the knowledge that he has gained from his exposure to the disciplines of the management process while a graduate student at The George Washington University.

The paper is divided into three parts. The first part consists of an examination and discussion of the budgeting principles and practices which influence the budgetary process in the development of weapon systems. The second part is a discussion of the concepts and philosophy upon which the budgeting process is built. In the last chapter are some of the more important considerations in the budgeting process which the author believes clearly stand out as guidelines for use by management.

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CHAPTER I

THE BUDGETING ENVIRONMENT

The Managerial Challenge

Although the management process is never a simple one, in weapon systems development its complexity has risen to new heights for a number of interrelated reasons. While other industries are faced with one or more of the problems arising from the following conditions, very few have to face all of them simultaneously.

In the first place, the industry is deeply involved in research and development programs. The management problems involved are considerably different from those in the traditional airframe production from which the weapon systems industry evolved within the past few years. There is the shift in personnel from production to engineering and scientific work which entails new methods in supervision and evaluation, for output can no longer be measured by the number of aircraft delivered each day or each month.

Because the areas explored are frequently on the fringes of known technology, the problems of anticipating costs and manpower requirements and evaluating the results can be very difficult for management.

In addition to being involved in research and development, weapon systems development is working mainly on government contracts. This

imposes heavy reporting requirements on the contractor, including proposals, bids, progress reports, cost statements, renegotiation reports, and Internal Revenue tax reports. Since the requirements of the various government agencies are not always uniform, the reporting problem becomes even more difficult.

Another factor which has intensified the management problems of the industry has been its rapid growth. This growth has in itself brought about problems of training and absorbing personnel, not only in the technical area, but also in the management, accounting, reporting, and data processing areas. Since data processing itself is a relatively new tool, the problem has been compounded by new personnel, in a new industry, using a new tool, to implement a new reporting technique.

Finally, most of the development programs in the industry are long-term. Instead of the conventional quarterly, semiannual, or annual budgets, plans and budgets extend over periods of two, three, five, and even ten years. In addition, new programs and new contracts are embarked upon at such frequent intervals that plans are constantly changing.

Before discussing the specific area of budgeting, it is important to examine where it fits in the total management picture.

Management consists of planning, assembling resources, directing, evaluating, and reviewing and adjusting the methods of operations and/or objectives.[1] Since industry is dynamic, this process is a continuous one.

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[1] Peter F. Drucker, "Managing for Business Effectiveness," Harvard Business Review, Vol. 41, No. 6 (1963), 71.

At the operating level, frequent reviews and changes in plans are required. At higher levels, reviews may be monthly, or quarterly, or less often. Each higher level of management requires a greater degree of summarization of data, both in time span and in degree of detail. An operating manager may be interested in the time to do a particular job; the department head, in the over-all costs of the department; and the division manager, in major costs of the division.

Budgeting and operational information is furnished to management to be compared and evaluated. Management then takes action to revise the methods of operations, plans, prices, schedules, or budgets. This action, which is the result of management's decisions, is known as control and it is based upon information and judgment.

A budget is a financial plan of action for a business, covering a definite period of time.[2] Its purpose is to coordinate the activities of the various divisions of the business, aid management in securing control over different parts of the business, and find the most profitable course through which the efforts of the business may be directed. To achieve this end, the budget reflects not only a plan, but also a standard by which the performance and accomplishments of managers at all levels can be measured.

Different objectives are emphasized by various authorities. Some stress the planning aspects, others the coordination, and yet others the

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[2] Donald P. Jones, "Management's Use of Budgetary Control," The Controller, May 1961, p. 226.

controls. Maximum results are obtained when all objectives are emphasized and obtained.

The advantages and benefits of a budgetary system are manifold. A budget in itself neither controls nor sets policies.[3] Its discipline helps develop a balanced program for the utilization of resources, whether manpower, facilities, or finances. It helps management to stabilize the use of its resources and thus prevent waste.

Since the budget is management's declaration of a plan of action, it serves as a formal means of establishing policy and advising various echelons of management what their goals and targets are.[4]

An important benefit of a budgetary system is that it requires the coordinated effort of all departments of the enterprise. As the entire organization cooperates in the development of the budget, the final result represents the consolidated judgment of the entire organization, and as such will have the support of all groups.

Budget Director

In general, the duties of the budget director are to coordinate all activities relevant to the preparation of the budget.[5] He helps department

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[3] Ibid., p. 227.

[4] Henry DeVos, Management Services Handbook (New York: American Institute of CPAS, Inc., 1964), p. 72.

[5] John F. Rogge, "An Approach to Practical Budgeting," The Controller, June 1958, p. 269.

heads prepare their estimates by furnishing them with historical data and estimates of future resources and constraints. He summarizes all the departmental budgets into a coherent, unified document for top-management consideration. In the process of a weapon system development, the budgets are summarized at possibly six or seven levels from section through top-level management. Upon approval of the budget, the budget director monitors actual expenses and the variances, and prepares the necessary budgetary reports for all echelons of management.

In weapon systems development, because of the large size and the decentralization of many of the projects, the duties of the budget director are frequently also decentralized to the divisions and projects. Standardization, policy, and the coordination of the work of the various divisions are still handled by the budget director.

The Budget Period

The establishment of a budget presupposes a specific period of time--monthly, quarterly, annually, by project, or by task. The length of the period will vary with the type of weapon system being developed and the phase of operations which is being budgeted. A capital expense budget may well be planned for a period of ten years in advance. On the other hand, a small project may cover only a few weeks. In weapon systems development, which is project oriented, the budget will usually cover that phase of the project which has been funded--that is, for which funds have been appropriated.

This may be a period of from several weeks to several years. Since some departments are continually receiving new projects, their budgets are always in a state of flux.

Figure 1 depicts the periods which various budgets may cover. Project A, a major weapons systems contract, was funded in full. It was awarded in the current fiscal year and will last about two years. Project B, an electronic subsystem, is a project carried over from the previous period and will continue into the next period. Project C, a retrofit program, started after the beginning of the current period and will be completed in this period. Project D has been funded only to the end of the current year, although it is anticipated that it will continue for several years.

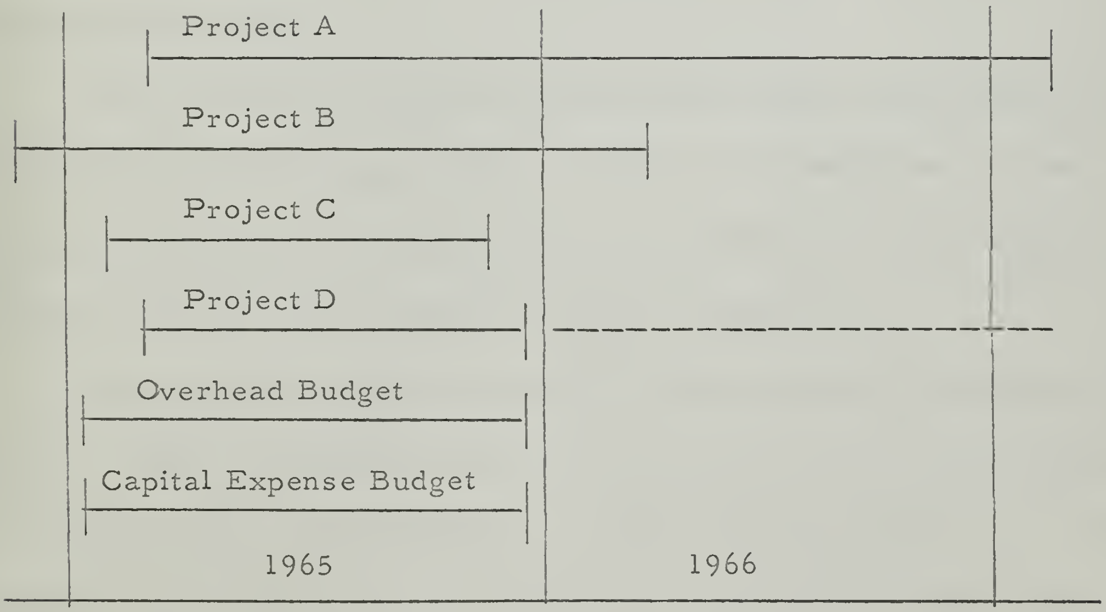

Fig. 1. --Length of budget periods

The overhead budget covers the fiscal year, although if the volume of activity should change materially either upward or downward, revisions would be made in the various overhead budgets. In connection with the overhead budgets, it is interesting to note the manner in which these are handled in CPFF and CPIF (cost-plus-fixed-fee and cost-plus-incentive-fee, respectively) contracts. Since overhead is an important element of cost, the government and the contractor will agree upon an overhead rate depending upon past history and future projections of overhead costs and volume of activity. Weekly or monthly billings will be made using these estimated rates. The rates can be based on direct labor hours or dollars, engineering hours or dollars, or as a percentage of total costs in the case of general and administrative overhead. Periodically, these rates will be renegotiated with the contracting officer.

The question frequently arises as to how often a budget should be modified, for if it is changed either too often or too infrequently it may become meaningless. No fixed rule can be established for the frequency of revising a budget. Good judgment is the sole criterion.[6]

Although many budgets are tied to a time period--for example, the overhead budget for the fiscal year 1965--there are other budgets which are more closely tied to the completion of certain events or milestones. For example, the design of subsystem XYZ may have a budget of $100,000.

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[6] Raymond Villers, "The Managerial Approach to Budgeting," The Controller, October 1958, p. 508.

This budget will be applicable whether the design requires two months or three months. This adds a complication both to the establishment of the budget and to the reporting procedure. Methods must be devised for identifying those budget items which are a function of time and those which are a function of the completion of certain tasks. Similarly, in the latter case, it is not enough to report costs alone. Associated with each cost must be the milestone passed or the percentage of completion.

The dangers of depending upon time-cost figures alone are illustrated in Figs. 2 and 3, given on page 10. At the end of eight weeks (point 1), costs appear to be right on target. However, since percentage of completion is only 15 per cent as against 25 per cent budgeted, it appears that costs are actually 66 per cent in excess of the budget. At the end of 16 weeks (point 2), it would appear that costs are considerably in excess of budget, whereas the percentage of completion is even further ahead of plan, and the project is actually doing well.

Chart of Accounts for Budgeting

One of the basic requirements to any management information or budgetary system is a logical, well designed, comprehensive numbering system or, as it is generally called, a chart of accounts.[7] This account numbering system includes not only the usual general ledger account

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[7] R. D. Kennedy and S. F. Kurtz, Introductory Accounting (Scranton, Pa.: International Textbook Co., 1960), p. 162.

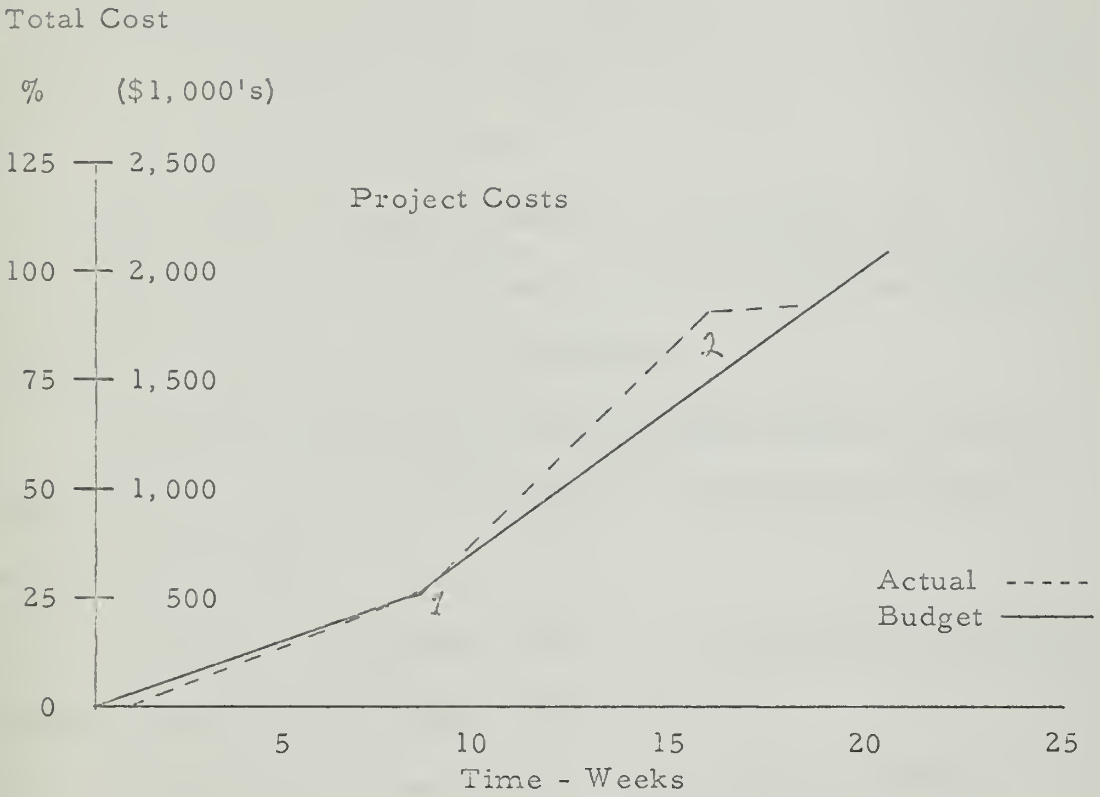

Fig. 2. -- Project costs, budget and actual

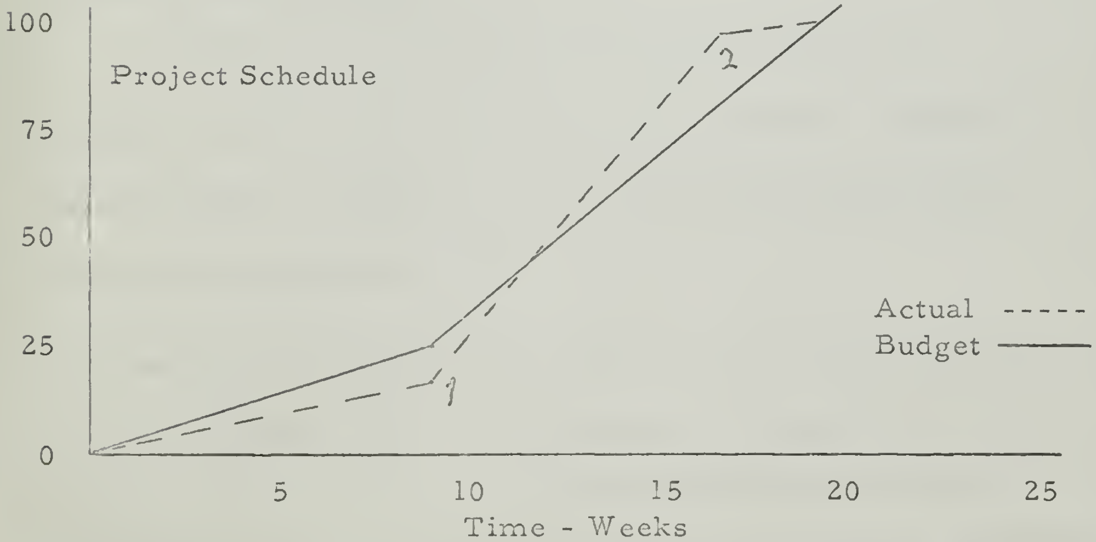

Fig. 3. --Project schedule, plan and actual

numbers, but identification of projects, subprojects, divisions, departments, work orders, authorization, part numbers, and so on. An account numbering system affects every area of a business.

A well designed system will have the following qualities:

1. It will be easy to understand, since many persons untrained in accounting must use the account numbers.

2. The numbers should be short, to reduce errors in entering them in remote terminals or on timecards, purchase requisitions, and other documents.

3. The system should enable data to be summarized at any level at which reports may be needed. This could be:

    (a) By level of management, from corporate through division, department, or section.

    (b) By project level, from major system down to the smallest work package.

    (c) By type of contract, type of fixed assets, etc., keeping in mind the requirements of the customer, management, the Internal Revenue Service, the renegotiation board, state tax requirements, etc.[8]

In attempting to fulfill the above requirements, it may be noticed that some of them are contradictory. For example, it is desirable to keep the

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[8] Floyd H. Rowland and William H. Harr, Budgeting for Management Control (New York: Harper & Brothers Publishers, 1945), p. 65.

numbering short, but this is usually impossible when all the other requirements are to be met. Designing a complete system requires the coordinated skills and knowledge of individuals from all facets of the company.

One of the complicating factors in the preparation of a budget in weapon systems development is the fact that estimates, budgets, and costs must be categorized in three major ways:

1. By project (example: Missile A, Satellite B, etc.)
2. By department (example: Machine Shop, Electronic Assembly Department)
3. By cost element (example: Direct Labor, Material, Travel).

Thus, the project manager receives a budget under which he may farm out work to various departments, including outside subcontracting. The various department managers receive budget authorizations to perform certain work for many different projects. In fact, one department may subcontract work to another department. Finally, all costs are usually identified according to certain conventional accounting classifications or elements of costs, such as direct labor, direct material, tooling, subcontracting, etc.

In addition, breakdowns are required by general ledger account number, by contract, by item number within contract type, by major system and subsystem, etc. It can be seen that under these conditions, coding of items in the budget, and eventually coding of costs to match the budget allocation, can be one of the most important elements in the success or failure of a budgetary system.

A well designed account coding system is vital to the success or failure of a budgetary system.[9] However, there is no universal coding system that could be applicable to all companies in the weapon systems development industry. Each company and each management has unique requirements, and any new coding system has to be superimposed upon and must be compatible with an existing system, since the conversion of all existing cost, accounting, and budgetary records from one coding system to another represents a formidable task. It is for this reason that one frequently finds in the weapon systems development industry complex and involved account numbers which are the result of evolutionary growth and compromise. The ideal, of course, would be to design a system without any restrictions and encompassing all the information needs of management, the customer, and the government.

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[9] James L. Pierce, "Control by Budget," The Controller, July 1957, p. 330.

CHAPTER II

TYPES OF BUDGETS

Fixed and Variable Budgets

Budgets, being both a plan and a forecast, have definite limitations since they are based on certain assumptions as to level of activity. For example, the shipping department may have a budget of $100,000 representing a foreman, ten men, and about 10,000 square feet of space. This budget is predicated on a particular volume of shipments. Obviously, if the volume of shipments should double, some but not all of the department's expenses would increase. This is the concept of fixed and variable expenses, and fixed and variable budgets.

Fixed or nonvariable expenses are presumed to remain unchanged under varying conditions. Semifixed or semivariable expenses are presumed to vary with changes in the volume of business activity, but not in a fixed ratio to that volume. Variable expenses are those which not only vary with the level of activity but also maintain a constant ratio to that volume.[1]

In actual practice, very few expenses are either truly fixed or truly variable. They all appear to be semivariable to a greater or lesser degree. This is demonstrated in Figure 4 on the succeeding page.

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[1] DeVos, op. cit., p. 81.

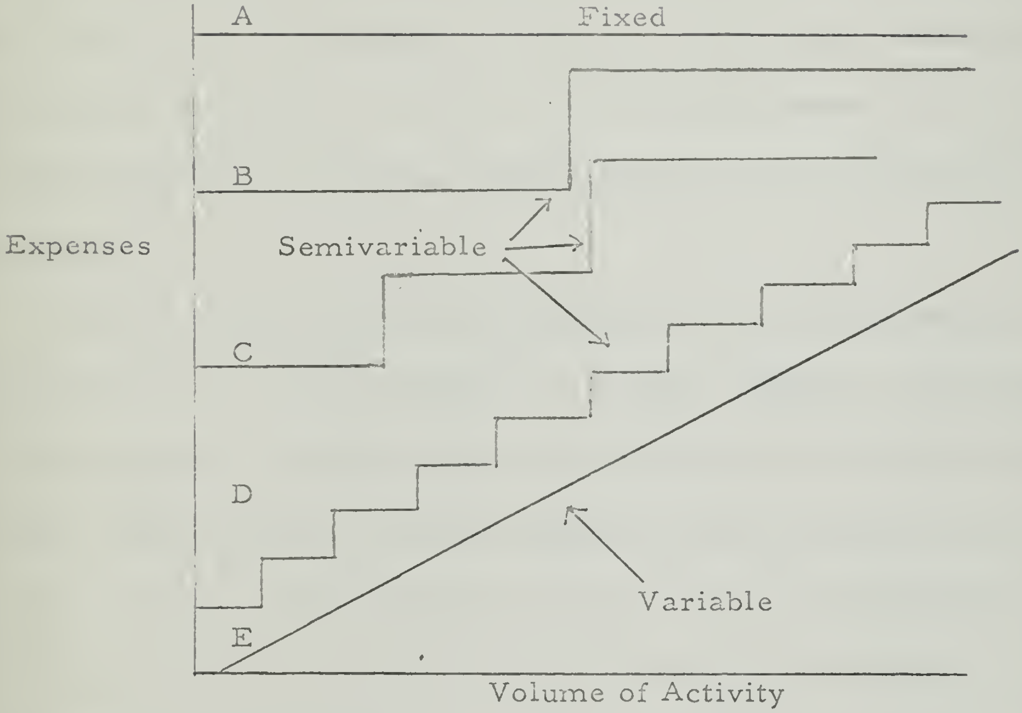

Fig. 4. --Expense Ratios

Expense A could represent liability insurance, which is normally considered a fixed expense. Expense B could represent rent expense, which is also normally considered a fixed expense. However, as the volume of activity increases, a point is reached where additional space must be acquired, such as at point 1. The amount of space need not be doubled, since some facilities will not need additional space.

Expense C is typical of foreman expenses. Every time an additional 15 or 20 employees are hired, an additional foreman must also be hired.

Expense D is the closest approximation to a variable expense. This could represent the steps in the hiring of direct labor. The difference

between expenses B, C, and D are in the frequency and size of the step increments as a function of activity. There is another distinction between the fixed and variable expenses. As volume of activity decreases, it is far more difficult to cut back on the fixed or semivariable expenses than on the variable expenses.

In the weapon systems development industry these steps are usually ignored and the curves smoothed out, as in E. However, since these categories of expenses do exist, one does sometimes see fixed and variable budgets which are associated with either a constant volume of activity or a variable volume. Although the principles behind the classification are well understood, there frequently is disagreement among experts as to the classification of specific items.

Since many departments receive a budget for each project, task, or contract upon which they may embark, one may consider their entire budget as a variable one, fluctuating with the task assigned to them.

Summary Budgets and Functional Budgets

One objective of a budget system is to produce a forecasted balance sheet, profit and loss statement, and cash flow statements for management's use.[2] These are the summary budgets. Before they can be prepared, each element going into them must be forecasted and individual departmental or tional budgets prepared. The functional budgets cover sales, operations

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[2] Jones, op. cit., p. 226.

(which include labor, material, and factory overhead), and the general and administrative budget. In the weapon systems development industry an important operational budget is the project budget. Here again, the significance of the frequency and level of reporting appears. The project manager is concerned with frequent reports on the status of his project. He would normally not be concerned with the estimated balance sheet and profit and loss statements. These, although just as important, are of interest to another segment of management.

Estimating the future financial position of a company as a result of estimated operations can be considered a typical simulation problem, and as such, ideally lends itself to computer techniques. Opening balances of the accounts are entered into the computer. Estimated operations are also entered and are converted into the appropriate journal entries, added or subtracted from the affected accounts, and the project statements are then printed at high speed. This method provides both speed and flexibility. The results of changing conditions such as the rate of progress, payments on government contracts, rate of profit, whether a contract will be received or not, can readily be observed. As the parameters are changed, it usually requires but a few minutes to prepare new estimated statements, which would require either many hours or several days using manual methods.

Forecasting of cash requirements in the industry is of considerable importance.[3] Because of the nature of government contracts and the

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[3] Ibid.

methods of reimbursement and payment of fees, the cash position of a company is subject to extreme fluctuations. Variations in government contracts are numerous, but generally the government holds back either a percentage of costs or fee or both. If a company is operating under a letter of intent, the amounts withheld may be considerably greater until a definitive contract is signed. Thus, in estimating funds to be received, close coordination is required between contract and financial personnel in order to estimate when additional funds will become available. A summary of costs, reimbursements, and retentions of each contract is prepared. Since most companies, even though engaged in only one or two programs, have many contracts in house, the summarizing of all contracts becomes a time-consuming task. Here again, data processing can take an essentially simple but voluminous task, and save a large amount of time and effort in the computing and printing of the necessary reports.

A cash forecast is a form of summary budget. Such forecasts are usually prepared every month for the succeeding three to six months. Where large divisions operate semi-autonomously from corporate headquarters, excess cash is forwarded to the corporate treasurer, and, similarly, arrangements are made to obtain additional cash requirements from the corporate treasurer.[4] These requirements must be anticipated well in advance.

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[4] Earl R. Uhlig, Vice President of Finance and Controller, Martin Co. Div., Martin-Marietta Corp. Speech before the Navy Graduate Financial Management class, The George Washington University, November 1964.

Another important summary budget is the capital expense budget. As individual companies have become larger, a smaller amount of top-management attention is devoted to operations and more to the allocation of resources and the long-range plans, including large-scale capital expenditures.[5] The reason for this condition is that as companies become larger, it is possible to delegate more of the operational functions to top-level managers, and long-range plans become more important to top management. Their decisions, which commit the corporation for long periods of time and for large amounts of capital, are reflected in the capital expense budget, which is a carefully considered plan and authorization for the acquisition of capital equipment, land, and buildings. This budget becomes one of the inputs to the summary budget system.

The Project Budget

Most direct cost or operational budgets are directly involved with the accomplishment of a specific task or project. They are, therefore, called project budgets. The preparation of the project budget is closely related to the estimating and pricing function, since ideally the estimate or proposal submitted to the customer would, when accepted, become the budget.

In practice, the time and cost limitations during the proposal period preclude sufficient detailed planning to enable the proposal to serve as a

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[5] Pierce, op. cit., p. 352.

budget. During the process of negotiation with the customer, modifications may occur in the scope of work, schedule, and price.

The project budget is the financial plan by which the operation will be evaluated.[6] Preparation of the budget requires completion of the scheduling function and establishment of the major milestones.

Implementation of the project budget entails participation of the project finance and operating organizations. The procedure used by one weapon systems development company is as follows:

1. Financial operations will:
    (a) Release the total project budget to the project organization administering the particular project.
    (b) Prepare and release the work orders compatible with the desired cost accumulation structure under the particular project.
    (c) Issue weekly reports, indicating budget performance by operating organizations, and monthly reports, comparing actual and forecast cost position to the project budget.
2. Project organizations will:
    (a) Assist financial operations in the establishment of the work order structure.

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[6] F. E. Moore and H. F. Stettler, Accounting Systems for Management Control (Homewood, Ill.: Richard D. Irwin, Inc., 1963), p. 56.

(b) Prepare and release work authorities defining the tasks to be performed, referencing the applicable project, schedule or planned period of performance.

(c) Allocate work to the affected major organizations.

(d) Release and maintain time-phased budgets to the major organizations for work assigned.

(e) Monitor and evaluate the budget performance of the major organizations.

(f) Conduct formal budget status reviews for each contract at least once every three months or more often as required, and negotiate budget revisions with each major organization.

(g) Notify financial operations at the conclusion of each such review of the estimates for inclusion in the monthly project cost status reports.

3. Major organizations will:

(a) Release task, schedule, and time-phased budget information to their operating departments, and control performance thereunder.

(b) Maintain liaison with the project organization to insure up-to-date status of task, schedule, and budget information.

(c) Notify the project organization of anticipated overrun conditions as soon as such conditions become apparent.

(d) Coordinate the preparation of the major organization data for the formal budget status reviews with the project organization.

4. Departments will:

(a) Perform assigned tasks within budget and on schedule.

(b) Notify the major organization budget control organization of all transfers of work and budget into and out of the department.

(c) Notify the major organization budget control organization of potential overruns as soon as such conditions become apparent.

(d) Prepare data for the formal budget status reviews.

In the aforementioned procedures, frequent references are made to schedule information. As noted earlier, in the performance of the project, schedule and cost are closely related to each other.

Budget and schedule both represent the plan. Actual cost and time of performance represent accomplishment. To be meaningful, all four elements must be considered at the same time. In the type of work done in the weapon systems development industry, the linking of all these elements is indispensable to adequate control. In principle, this is relatively simple. In practice, because of the very large number of tasks and the difficulty of assigning identical control accounts numbers to accumulate costs and to identify activities or milestones, the solution becomes complex.

Time-Phased Budget

One of the methods for coordinating schedule and cost information is called time-phased budget. In this procedure the total budget is broken down by department and by the number of man-months authorized for each month for the next twelve months (or to the end of the contract, if less than twelve months). The object of the system is to be able to match actual monthly and cumulative expenses against the amounts allocated to each time period, rather than the total project budget. Separate reports are prepared showing task performance.

The time-phased budget is an improvement over non-scheduled oriented budgets. There are, however, limitations to the coordination that can be achieved in separate cost and schedule reports.

CHAPTER III

SCHEDULE ORIENTED BUDGETING

Prior Budgeting Systems

During the early 1900's, Frederick W. Taylor and his followers laid the foundations of scientific management. By observation and measurement, they firmly established the concept of direct labor standards and control of direct labor costs. This basic approach then evolved into such management system applications as measured piecework in repetitive factory operations.[1]

It is important to emphasize that the concept of measuring direct labor costs in relation to volume of goods produced provided the central framework for cost control systems and budgeting up until the era of PERT/Cost. The introduction of "standard cost" and "flexible budget" systems, along with "break-even analysis" during the 1920's, depended upon this basic concept.

In these systems costs are segregated into the categories of "directly variable," "semivariable," or "fixed," with respect to volume of goods produced. In order for such cost control systems to be effective or at all valid, the "variable costs" must be based on data established by industrial engineering practice--i. e., data of the type evolved by Taylor. The fixed or overhead

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[1] Frederick W. Taylor, "Time Study, Piece Work, and the First-Class Man," Classics in Management, ed. Harwood F. Merrill (New York: American Management Association, 1960), p. 76.

elements in such cost control systems are generally handled on a "budgeted" basis--i. e., annual levels of expenditure are determined, generally by functional or organizational units, and usually without any specific identification of the cost of individual tasks within the overhead structure. It is important to mention that, with the introduction of "work measurement" techniques in the late 1940's, the principle of examining the cost of individual overhead tasks was established. However, the basic approach was quite similar to the methods used by Taylor in establishing direct cost measurement.[2]

Given a pricing structure and a sales forecast of goods produced, these approaches to cost and profit control worked very well for the majority of American businesses through the period of World War II and into the early 1950's. The success of these systems was predicated on high-volume production of standardized products, or at least products with an established bill of materials and associated standard costs. These approaches did not work on the large, nonstandard programs--i. e., programs with a high engineering content like weapon systems development, which came increasingly to the fore in the mid-1950's. What was needed was a coordinated cost and scheduling technique for developing budgets.

PERT-Cost and Management

A coordinated cost and scheduling technique which has attracted much attention is PERT-Cost. The Department of Defense and the National Aeronautics and Space Administration have given considerable impetus

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[2] Ibid.

and encouragement to PERT-Cost. In some cases, they have made the use of the planning and reporting system a contractual requirement. PERT-Cost is not a control system, but a planning and reporting tool which helps management control costs.[3]

PERT, Program Evaluation and Review Technique, is one of the most significant advances in management methods recently developed. The PERT technique was developed during 1958 at the Navy Special Projects Office under Admiral W. F. Raborn, Jr., for the application of statistical and mathematical techniques to project management for a large weapons system, the Polaris missile and submarine. The technique was instituted to aid in planning and controlling three major factors of large systems development: time, cost, and technical performance. Although PERT was the basic framework of monitoring and control, its use was in the evaluation of schedules, the time aspect.

PERT and PERT-based systems are sound, dynamic management techniques which have been used in a variety of industries. Users have included the military, airframe fabricators, petroleum and chemical industries, manufacturing plants, engineering firms, and others. These PERT-based systems and their refinements provide the necessary information for better project management, including cost management and budgeting.

The PERT-Cost system provides integrated management information for project budgeting, planning, monitoring, and control. The types of

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[3] Hilliard W. Page, "How PERT-Cost Helps the General Manager," Harvard Business Review, Vol. 41, No. 6 (1963), 88.

projects for which the PERT-Cost system can be used are as varied as any that exist in industry. In general, PERT-Cost can be used on any project made up of groups of activities which can be sequenced into a combination of parallel and serial chains. The PERT network is a graphic presentation of such a sequenced set of activities.

The basic objective of the PERT-Cost system is to associate the various activities to be performed during the weapon systems development with their related schedules, manpower requirements, and cost information.[4]

PERT Cost and Budgeting

The concept of cost predetermination for planning and control is not new to the accountant. The entire function of budgeting is predicated upon predetermination. Comprehensive budgeting relates income budgets, covering revenues and expenses, to the financial goals of the firm. The expense budgets lead to financial planning and control via projected income, while at the same time the flexible budget and the expense forecasts serve as tools for decision making by relating costs to volume.

PERT-Cost estimates are a new way of looking at the expense budgets. If properly conceived, they can become an integral part of the comprehensive budget program. Yet they differ from conventional expense budgeting in certain respects. From the financial planning and control viewpoint, the

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[4] U. S. Department of Defense and National Aeronautics and Space Administration, PERT Cost Systems Design (Washington: U. S. Government Printing Office, June 1962), p. 2.

PERT-Cost estimates are not concerned with accounting periods. PERT Cost is activity oriented. There is a cutting across of organizational structures and time periods to define "things to be accomplished." The focal point of cost accumulation shifts from the department to the project work package. The annual budget is bypassed to encompass an end item accomplishment. From the detailed decision-making viewpoint, where the flexible budget normally uses volume as the factor of variability, PERT Cost attempts to use activity time.

The PERT-Cost system aims to present meaningful information for planning and controlling cost of complex projects.[5] One of the primary benefits is a definite plan of action in attacking the problem once the objectives of management have been stated. Another benefit is the discipline of thinking the job through at each level of management.

To carry out these objectives, the sequenced activities are grouped into a network. This network is a plan of action. It is a realistic and understandable representation of the project and provides the framework of the system. The elements of planning information (cost estimates, estimated completion dates, manpower requirements) are then related to the elements of the network. The PERT-Cost system uses this information in preparing reports for integrating the plan of action and establishing schedules, budgets, and manpower assignments.

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[5] Ibid.

When the system is implemented on a project, the actual expenditures of time, labor, and funds are correlated against the plan, and this integrated information is presented to management for review. For example, time, cost, and manpower summaries can be given for (1) the project thus far, (2) outlook and estimates, and (3) the plan versus actual progress.

For the evaluation of this information, the system provides reports which monitor the planned program and pinpoint those areas which may require remedial action. Management decisions and actions can be made to bring actual progress closer to the approved plan of action.

System Implementation

In using the PERT-Cost system, two phases must be distinguished:

1. Initial Setup Procedure
2. Update-Monitor Cycle.[6]

The initial setup procedure defines management's objectives, breaks down the work, parcels it out to individual first-line operating managers, assigning their areas of responsibility, and develops the subnets for planning. A system of reporting is also established. Cost estimates are made and schedule mismatches are resolved. All the individual subnets are interwoven by means of their interface points into a total blanket network. At this point, the network is considered frozen and will be used as the plan of action.

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[6] Ibid., p. 23.

The Update-Monitor Cycle is the actual monitoring of the progress of the project, in terms of both time and costs. Actual expenditures of time, money, labor, and resources are recorded, accumulated, and compared against the plan for pinpointing those areas in which deviations are excessive. This will give rise to "management action" reports. The actuals will also be assimilated into the network for monitoring and making new outlooks compared against estimates and budgeted figures. This will originate status-type reports. All reports will, in turn, be presented to various levels of management for review and information for decision making. Through regular updating at frequent intervals, the system is dynamic in responding to changes and variances within an update cycle period.

Work Breakdown

The work-breakdown structure is an important feature of a PERT-Cost operating system.[7] Once the management objectives have been defined, the project can be broken down into subprojects. Each subproject, in turn, can be broken into lower-level subprojects. This breakdown facilitates planning, and proceeds from top to bottom. At a lower point is the task level, where each task can be used to construct subnets in the usual PERT sense. A subnet consists of one or more tasks. The top-to-bottom work breakdown may be in terms of (1) end products or hardware assemblies, (2) the functions to be performed, or (3) the organization structure of user.

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[7] _Ibid._, p. 26.

The work breakdown may run to a number of levels. At the detail level, a project manager is assigned to develop the PERT-Cost subnet and to gather the appropriate data. The subnet will consist of activities or groups of activities. Information, usually cost data, that cannot be estimated for a single activity can be stated for a group of activities by a "sling" or "hammock" activity. This expresses the fact that the information for activities encompassed is available only for the group. Each activity or group of activities (hammock) may have the following types of information associated with it:

Time estimates
Costs by many categories
Department
Responsibilities
Manpower requirements
Type of work performed.

Work Reporting

Once the project has been planned, reporting levels are established, starting at the bottom. These levels may be (1) end products or assemblies, (2) functions, (3) funding, or (4) management structure. Usually, the reporting levels will correspond to the work-breakdown levels, but they need not be the same. These reporting levels will determine the dissemination of the output of the program. The information flow is to collect data from the project as it progresses and to enter these data into the PERT-Cost program. Reports which contain the integrated information will be distributed to the various reporting levels where management monitoring and control may occur.

The key point of any PERT-based system is the recording of the actual work accomplished. PERT Cost is an effective system to do this and at the same time provide cost information, manpower information, and time information against which actuals can be compared.

Management Reports

The planning of the PERT-Cost network and budget is only part of the task in a budgetary system. Another part is the actual collection of data and preparation of management reports. The process of cost collection is a large data processing function. The labor distribution system provides information regarding the hours and dollars expended. The material distribution system provides material allocation. The accounting system distributes overhead costs to the project. Generally speaking, some sort of data-processing equipment is required for the handling of PERT-Cost, just as it is for any detailed cost accounting system.

There are any number of reports possible from the system.[8] A few of the more important management reports are:

1. Management summary report. --This is the top program-management-oriented report of the basic PERT-Cost system. Costs are displayed on a "Work Performed to Date" and "Totals at Completion" basis. This is not the original planned budget through the current calendar date but,

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[8] U. S. Department of Defense and National Aeronautics and Space Administration, PERT Cost Output Reports (Washington: U. S. Government Printing Office, March 1963), p. 1.

rather, represents a special computation relating to the planned budgets of all completed Work Packages and those which are still in process.

2. Program/Project Status Report. --This is similar to the Management Summary Report except that it goes down to a lower work level.

3. Organization Status Report. --The Organization Status Report is directed toward the functionally oriented or department manager, and shows both man-hours and dollars cost, associated with Work Packages for which his organization is responsible.

4. Financial Plan and Status Report. The Financial Plan and Status Report is directed toward the financial manager or controller, as well as the program manager, and contains data on incremental costs and cumulative-to-date planned versus actual costs.

5. Cost of Work Report. --This report is the graphical equivalent of data found on the Financial Plan and Status Report and the Management Summary Report. It emphasizes the "value-of-work-performed" concept and time and cost deviations from plan on both a cumulative-to-date and predicted-at-completion basis. It is intended for higher level program management.

Other output reports are available from the basic PERT-Cost system depending upon the particular computer program being used. The output reports discussed above generally represent the most significant ones for cost control purposes. It should be clear that the major emphasis or orientation of these reports is for purposes of program management of cost.

CHAPTER IV

COMPUTER POTENTIALS IN BUDGETING

Budgetary Planning Problem

No discussion of an integrated management control system (budgeting system) could be complete without some comment on the potential of the computer. There are at least two major phases in the management control system in which the large memory facility and rapid computational abilities of a computer can greatly improve the system's effectiveness.

In the first place, it is necessary that the management accept and approve the plan before the control cycle can begin. After the evaluation and investigation phases of the control cycle, it is necessary that information be fed back to the planning group for use in drawing up and revising future plans. Two separate problems are suggested by this characterization of the control system. The first occurs at the time the basic plan is accepted and approved. In view of the uncertainty that surrounds the usual business operations, how does management know which plan will best meet the long-run objectives of the company? This is a difficult question to deal with, and yet a control system is only as good as the basic plan. Hence, management needs all the help it can get in choosing and approving the basic budget plan.

Simulation

The potential of the computer in helping to solve this problem lies in the use of the computer as a simulator. In concept, it is possible to view the budget as a set of external and internal economic relationships which, when programed for the computer, form a simulation of the company. This simulation would be a budget "model" of the firm. The model would contain statements on the production constraints for the various producing departments, market constraints for the various products sold, etc. The model would be stated in general terms so that the impact on company objectives of alternative plans could be tested. The important use of such a simulation lies in its ability to allow management to experiment with different alternatives prior to the actual decision of adopting a specific plan.

If it is possible to capture the budget in a computer program as described above, the potential of the computer in seeking a better solution to the budget approval problem is probably obvious. In the first place, the computer simulation could be used to test out the effect of several different alternatives and several different management actions, a procedure which is not feasible in most traditional budgeting systems. It may be that, in addition to having a better grasp of the impact of different courses of action, the management might be able to eliminate certain alternatives because they are clearly inferior to other choices that are available. In addition, a budget simulation might make it possible for the management to try certain measures as a way of turning an unprofitable operation into a profitable one. It

should be emphasized that the computer cannot make the final choice of the basic plan for the management, nor can the computer remove all the uncertainty about future operations. However, the real power of any quantitative analysis is to help remove as much uncertainty as possible and to establish the relationship between operating variables so that management has a better grasp of the economic situation. As an example, it may be that management does not know the demand relationship for its products; however, it will help to know the various price-quantity relationships which must exist in order for a product to earn the required profit. Such a relationship would be established by using budget simulation.

Timely Computation

The second key control problem occurs at the feedback point in the budgeting system. Useful feedback information imposes two important requirements. The first is that the data must be processed quickly and accurately. That is, the necessary budget revisions must be readily available to the management at all times. The other requirement is that the budget itself must represent a complete plan of the firm for the future. The plan must be complete in that all constraints on all departments, etc., must be a part of the budget. When the signal is received that conditions have changed, the impact of these changes on decisions for all parts of the operation must be determined. It is only through this type of rapid and complete revision that feedback information will allow the management to anticipate and react to problems. Notice here that the emphasis is on revising plans

for the future; the past is important only in so far as it is useful in predicting the future.[1]

The computer budget simulation should be very useful in meeting both of these requirements. Because of the data processing speed, quick revision of the budget resulting from changed conditions should be possible. Also, to the extent that the computer simulation is a complete plan for the firm, the future impact of present changes throughout the operation should be readily available. Obviously, the revised projections will only be as good as the program simulation itself. It is not meant to suggest that the data are going to improve simply because the processing is being done by machine rather than by a manual process. However, to the extent that the revision is rapid, the impact of changes throughout the system will be apparent.

The above discussion of budget simulation via the computer may appear to be in the class of ivory-tower dreams and quite far from anything which is capable of being put into practice. Computer simulation takes place at various levels of sophistication. There is no need to have a "perfect" and "complete" simulation of the entire company before this method will pay off. A complete simulation is probably possible in concept only. However, the complete simulation of a budget is a goal toward which we can move--a simulation short of this goal will be an improvement in the budgetary process.

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[1] E. B. Rickard, "The Past Is History . . . The Future Is Planning," The Controller, October 1962, p. 57.

There is certainly evidence in the literature and in practice which suggests that this idea is not as new and far-fetched as it may first appear.[2]

Evaluation Process

In the evaluation of operating results the gathering of accurate operating data represents a considerable problem because of:

1. The diversity of activities from which data are received.
2. The large number of transactions involved.

Size and volume breed unique problems which are non-existent in smaller operations; these are problems of specialization, coordination, and communication.

The trend is toward the automatic gathering of data through the use of remote terminals feeding directly into a central computer. Such a system eliminates the delays inherent in the manual entry and the forwarding of the various documents through channels.

Once the raw data are captured in the data processing system, they can be processed to prepare all the reports which may be needed. These can be historical accounting records, or evaluation reports where the data have been:

1. Summarized
2. Compared with budget and schedule

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[2] Richard Mattessich, "Budgeting Models and System Simulation," Accounting Review, July 1961, pp. 384-397.

3. Variance computed for budget and schedule.

4. Variance tested against tolerance limits.

The outputs are conventional accounting reports plus evaluation reports. In addition, the memory of the computer can store data for display on various devices such as cathode ray tubes, or plotters. Although the above has been referred to as a system, it is actually a collection of a number of management subsystems, each of which must be carefully developed and eventually fitted into the over-all pattern.

At the present time, relatively little use is made of the computer's ability to select exception conditions. It is estimated that in one aerospace company more than 2 million report sheets per week are printed. It is difficult for any level of management to identify problem areas in such a mass of reports. Computer programs have been developed and are available which test each budget variance against both an absolute number of dollars and a percentage of the year-to-date budget. These limits may be set independently for each account or project, and the volume of reports substantially reduced.

PART II

BUDGETING'S PHILOSOPHY AND CONCEPTS

CHAPTER V

BUDGETING: PLANNING AND CONTROLLING

Planning

The functions of management are very broad, but fundamentally they begin with planning and end with control. The planning process lays the foundation for coordination by anticipating future developments, by establishing a program to be followed, and by setting standards to be attained.

The catalogue of managerial functions is by no means standardized. The functions generally found to be most significant include planning, organizing, staffing, direction, and control.[1]

The task of management is to judiciously and economically allocate and assign the resources under its direction. Judicious allocation of resources and the timing sequence for combining material and human resources places a heavy responsibility on business management to formulate objectives, to collect and analyze pertinent data relevant to solution of the problems, to consider possible alternatives, to select the preferable alternative, and to develop a course of action to accomplish the selected alternative. The course of action, if logically conceived, should result in effective utilization of resources consistent with existing conditions. The

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[1] Harold Koontz and Cyril O'Donnell, Principles of Management (New York: McGraw-Hill, 1955), p. 34.

selected course of action may be appropriately labeled "The Plan." The entire process described above is descriptively termed "Planning." Planning is essentially a decision-making process involving the mental processes of thinking--exercising the powers of logic and judgment.

The activities of a business should proceed in accordance with a central plan. To insure this, basic objectives must be formally expressed and integrated into a coordinated program for major activities. The central plan should be supported by detailed supplementary plans for all activities, expressed in physical units, monetary units, or both. This approach tends to insure that the entire organization will work together in a coordinated manner through a series of integrated plans.

Budgeting is one of the best known management tools for integrating and implementing plans.[2] Budgets include forecasts of operations, finances, labor, material, and equipment requirements. The budgeting process makes provision for the development and quantification of objectives and plans for each subdivision of the business. The timing of actions to be taken in order to achieve plans is incorporated in the budget. Comprehensive budgeting balances, coordinates, and consolidates separate plans into a master plan of action. No plan of action is complete without a forecast of expenditures required to carry out the plan. A comprehensive budget encompasses a formalized estimate of income and expenses for all activities

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[2] Robert R. Renner, "Introducing an Organization to Budgetary Control," The Controller, November 1957, p. 527.

and the resulting status of assets, liabilities, and proprietary interests. Complete budgeting encompasses all phases of management planning and results in a unified written plan of action.[3]

Controlling

Control is dependent upon clearly stated objectives, adequate standards of performance, and carefully conceived courses of action. Koontz and O'Donnell note the following relationship between planning and controlling:

> Thus control implies the existence of goals and plans. No manager can control who has not planned. There is no means by which a manager can make sure that his subordinates are operating in the manner desired to accomplish the action wished without having established a plan no matter how vague this plan might be or for how brief a period of time. Naturally, the more dear, complete, and coordinated plans are and the longer the period of time for which they are made, the more complete managerial control can be [4]

The controlling process involves determination of the extent to which the program is being followed and the standards are being achieved. The controlling process provides for measurement of individual or group performance and the degree of coordination achieved, and culminates in corrective action.

Control in its best sense means gathering such facts and figures that would be indicative of the activities performed, measuring the quality of the performance obtained in these activities, and using the quality measures for

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[3] Glenn A. Welsch, Budgeting: Profit-Planning and Control (New York: Prentice-Hall, Inc., 1957), p. 1.

[4] Koontz and O'Donnell, op. cit., p. 545.

guiding men for better planning or improved organizing or more effective operating.[5]

To secure effective control at the top or at lower levels, management must have:

1. Definite goals and objectives
2. A plan or method for attaining each goal or objective.
3. A record of actual performance or accomplishment.
4. Standards in terms of which performance may be rated.
5. Comparisons of goals and standards with actual accomplishments.
6. Means of securing action to correct the delays, lags, deficiencies, inefficiencies, and maladjustments that are disclosed by interim reports, or to prevent their reappearance if a particular program is repeated.[6]

One of the prerequisites to undertaking control is the assurance that plans are clear, complete, and integrated. Moreover, the quality of planning, especially in terms of clarity, completeness, and coordination, must be such that those given the task of executing plans know well their role in the course of action intended.

A second prerequisite to control is the assurance that organization arrangements give necessary and coordinated authority to the subordinates who are expected to accomplish a task. If authority relationships are

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[5] Edward H. Hempel (ed.), Small Plant Management (New York: McGraw-Hill, 1950), p. 207.

[6] J. K. Lasser (ed.), Business Management Handbook (New York: McGraw-Hill, 1954), pp. 464-465.

obscure or if a manager or employee does not have the power to do a given job or does not know that he has the authority, the plan would almost surely fail of execution.

Evaluation

Evaluation implies the comparison of actual performance and trends with the standards, goals, and objectives of the organization. It is usual to think of performance in terms of cost and schedules. However, the objectives of most companies transcend these minimal objectives and encompass other vital areas such as quality, reliability, personnel relations, share of the market, and include both past performance and trends in these areas. The process of evaluation covers every phase of the business. Management must not only determine whether the product was shipped on time and at the budgeted cost, but, depending upon the level of management and the area of responsibility, must evaluate the performance of engineering, manufacturing, marketing, finance, personnel, quality assurance and reliability, research and development, and public relations. The range of evaluation that management must make is illustrated by such questions as: How well does a design meet the design objectives? and How effective are the personnel policies? Some of the information required for proper evaluation and control is financial, and a great deal of the data are nonfinancial. Since nonfinancial data are more difficult to gather and analyze, they are sometimes not given the attention they require.

At the project level, because of the nature of government contracts, appropriations, and funding, the greatest emphasis is placed upon matching budgeted costs to actual, projecting costs, and anticipating any contract overruns, or schedule slippage. Contract overrun is a term used in a cost-plus-fixed fee or cost-plus-incentive fee contract to describe the incurring of costs in excess of those originally planned. The contractor must report anticipated overruns to the contracting office. So much emphasis has been placed upon this phase of the reporting process that a large part of the reporting system in the development of weapon systems is designed to furnish this information as well as other government reporting requirements.

At the middle and lower levels of management, operating managers are concerned with adherence to budget and schedule. At the top level, management is concerned with the over-all profitability of its operation, trends, and alternative allocation of resources.

One of the management evaluation tools used extensively is the "chart room." This is a room where all significant management information is graphically displayed. The type of information displayed depends upon the level of management. It is usual to find chart rooms at the project level and at the top-management level. In addition, informal charts are kept at all other levels.

At the project level, management is concerned primarily with schedule and cost performance. Charts showing budgeted, actual and estimated-to-complete costs enable management to monitor performance.

Variance Reporting

This is a very important part of a control system. In reporting variances of any type, the tendency in the past has been to prepare reports showing all variances usually in an arbitrary departmental order. A more recent technique has been to show only those variances which exceed a standard set by management. This standard may be different for each project or department. It may be either a percentage variance or a dollar variance. It may be different for over-budget than for under-budget variances. It is management's responsibility to specify the tolerance limits. Once the exceptions are selected, they are then sorted by order of importance, with the most important variance listed first. This can be either the greatest dollar variance, or the greatest percentage variance.

One of the important decisions that has to be made in the control process is whether or not to investigate and explain the resulting variance.[7] Obviously, it would be better not to investigate the variance if nothing could be done about it and if no useful information would result from investigation. On the other hand, if investigation shows that the plan was wrong, so that there are some real advantages to be gained by revising the plan, then, obviously, the management would like to have the variance explained.

Favorable variances should not be overlooked in the process of investigating variances. Investigation of favorable variances may reveal new and

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[7] Villers, <u>op. cit.</u>, p. 508.

improved production methods which can be applied elsewhere in the operation. Also investigation of favorable variances may show up standards which were too loosely established at the outset and thus require revision.

To the extent that the control process is carried out through the accounting system, the responsibility of the accountant in this regard is to analyze variances in such a way that a basis for corrective action is provided. In other words, the report that goes to the manager should be in such a form that important variances are explained so that the manager has a reasonable chance of taking the proper corrective action.

Pitfalls and Roadblocks

There are certain pitfalls in budgeting, and the cost-minded manager would do well to watch out for them. Probably the most serious is the tendency of managers to apply budgets as restrictions on effective action rather than as forward plans. "Adherence," as it were, breeds rigidity; an extremely sound but unanticipated expenditure is disallowed because it is not in the budget. Although a plan can be of little service if it is not followed, the cost-conscious manager must take steps to avoid the dangers of rigidity.[8] There must be a well-understood procedure whereby he can quickly secure permission for unbudgeted expenditures which he can justify in terms of benefit to the firm.

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[8] Pierce, op. cit., p. 329.

Another pitfall is the occasional failure of managers to spot cost-reduction possibilities when operations are running within planned budgetary limits.[9] Even aside from changes in operating conditions which might warrant cost reductions, it is unwise to overlook potential savings in areas which show no variance from established budgetary standards. Presumably, when the manager builds his budget from available forecasts, he bears in mind the best possible operating performance, but he should continue to concentrate on improved operations throughout the year.

A frequent adjunct of this kind of situation is the demand for over-all across-the-board budget cost cutting of some specific percentage. This is nothing less than a declaration that management does not know how to build and operate a budgeting plan that will lead to reductions and control by means of realistic standards, a factual budget, reported variances, and consistent accountability. It has been proven before that such cuts penalize the effective manager and leave the fat-builder unscathed. They also encourage the evasive manager to hide costs so that he generally escapes the purge when it comes.[10]

There is another enemy of successful budget practice which may well be the cause of more of the friction between budgets and people than all the other errors put together. It is the misconception on the part of controllers budget managers, accountants, and other staff people concerning their part

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[9] *Ibid.*

[10] *Ibid.*

in the process.[11]

When a controller takes operating personnel to task for exceeding the budget, he is inviting trouble of the worst kind. His correct course is to report the situation to responsible operating management. The problem then rests with the operating personnel, which is exactly where it belongs. It should be discussed and action determined in the line organization. No controller should permit himself to be placed in the position of giving approval to budgets or disapproval to results.

The same principle applies to all staff people concerned with coordinating the budgetary process.

Another misconception sometimes indulged in by budget men is that they are almost solely responsible for cost reduction. It is difficult to conceive of a practice that violates more completely the basic principles of good human relations. The attitude which should govern the staff people in this area, as in all other staff assignments, is one of maximum helpfulness to the line personnel. Only in this way can the budget man gain the operating organization's confidence.

One of the administrative problem areas of budgeting is the tendency on the part of some executives to expect results from the technique, failing to appreciate the fact that budgeting is a tool to be used by management and is effective only through the actions of responsible individuals. These

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[11] T. P. Boyle, "Budget Organization and Administration," The Controller, July 1959, p. 318.

executives apparently do not realize that the budget does not manage, but is an effective tool available to management. The results obtained are dependent upon how the tool is used. It does not and cannot substitute for the use of judgment and good leadership by management.

Closely related to the above problem has been the failure on the part of some executives to recognize that effective use and application of budgeting depends almost wholly upon an understanding and appreciation of the importance of sound human relations. In other words, good use of budgets and budget techniques can be realized only through the coordinated efforts of many people at various management levels. It helps to have these people understand what budgeting is and know that they honestly play an active role in making the budget system work.

CHAPTER VI

HUMAN RELATIONS IN BUDGETING

Attitudes

All of the steps toward sound budget practices have their roots deep in personnel administration. Each one is, in the final analysis, the reflection of a problem involving people. Budgeting rests on principles which have more in common with concepts of human relationship than with rules of accounting; and if these principles are applied, successful practice is inevitable.[1]

In probing further, it quickly becomes evident that good attitudes are the key to successful budgeting. When the attitudes of people toward each other are generous, understanding, and based on mutual respect, any technique adopted by management to further effective performance is apt to be successful. When human attitudes are dominated by distrust, criticism, and recrimination, any technique designed to improve performance is likely to fail miserably.

Budgeting is a trained, disciplined approach to all problems, which recognizes the need for standards of performance in order to achieve a result. Hence, it must be built on a base of good organization; otherwise, favorable attitudes have no chance to operate. But at the same time it lives in an

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[1] Chris Argyris, "Human Problems with Budgets," Harvard Business Review, January-February 1953, p. 97.

atmosphere of perpetual adjustment to the needs and capacities of people. It thrives on such fundamentals as recognition of accomplishment, consideration for the rights of individuals, fair play--in other words, enlightened relationships among people.

It is at the point of deviation from the budget that most of the human problems are born. This is, by design, the central point in the entire system--the moment which demands explanation, instruction, decision, argument, or even discipline, as the case warrants.

Motivation

The paramount problem in planning and controlling is one of motivating people to participate constructively in the planning and control processes, each according to his ability and position. The opportunity to participate must be available, and the individuals should be urged to take full advantage of this opportunity.[2]

In the utilization of any managerial technique, it is essential that the importance of practicing effective human relations be clearly recognized. The mechanics of planning and control must be clearly distinguished from the motivation of individuals. The success of an organization largely depends on the ability of the management group to plan effectively and to work with and lead, as well as direct, individuals to execute the plan effectively. This is an art. It stems, in the end, from the administrators' active, sincere

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[2] Ibid., p. 108.

interest in the people working with and under him. Effective execution depends on sound control procedures and the ability of management to motivate individuals to regulate operations constantly toward the goals outlined in the plan.

Disciplined Environment

Since business budgeting is an art and not a science, rather wide differences in conceptual interpretation of the budget can be expected. It is perhaps inevitable that in some organizations these interpretations will be naive or superficial in nature. Similarly, flexibility of budgeting techniques in meeting the numerous needs of our diversified industrial complex is unquestionably essential.

In contrast, a disciplined environment is the one element essential to successful budgeting which does not permit wide latitude in interpretation. It cannot be a superficial creation of management or inconsistently applied, if the budgetary objectives of planning, coordination, and control are to be fully realized. For some strange reason, "discipline" has become an abhorrent term to most managers. The ability to suggest gracefully has become confused with leadership, an integral part of which is the prerogative to command.

Herman C. Heiser, a partner of the firm of Lybrand, Ross Bros. & Montgomery, in his book *Budgeting Principles and Practice,* points out:

> The awareness throughout all levels of management that the budgeting is for their guidance and control is a prerequisite of control. Knowledge that unauthorized variations will have to be explained and justified

> tends to promote adherence to the budget as a control device. This suggests, therefore, that the first line of action in securing better control is to devise and then adhere to a system of inquiry and review. Accountability, as among various levels of management, should be an accepted principle. . . . The idea of the budget must be sold to all levels of management.[3]

While sound concepts and appropriate procedural techniques provide the form of the budget, the substance of it lies in the disciplined response of people to the policies and practices of the business of which they are a part.

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[3] Herman C. Heiser, Budgeting Principles and Practice (New York: The Ronald Press Co., 1959), p. .

CHAPTER VII

CONCLUSIONS: MANAGERIAL GUIDELINES

Leadership

The most important ingredient to successful budgeting is top-management participation. Nothing can replace or come close to the effect produced by top-management support. It is precisely this participation that keeps budgeting alive, maintains direction, and allows operating people something to measure themselves against.

Management support of a program or technique implies more than mere sanction. The type of top-management support, as reflected in attitudes and actions, will largely determine the type of support generated at other management levels.

Coordination

The controller and his staff must express the correct attitude for the responsibility they undertake with respect to the budgets. It is the controller's job to establish, maintain, and coordinate a budgetary system--in fact, a complete system of planning and control. But this work must be accomplished through authorized management. He must not enforce his instructions or issue orders. He and his staff must be devoted to producing, reporting, and interpreting information--to making the planning and control machinery run. He is wholly a staff executive. He must provide the

control service and refrain from making operating decisions.

Planning

The budget must be firmly anchored in a foundation of company planning. The budget is not the plan; it is merely the statement of the plan in the language of figures. Think first in terms of the organization's basic plans. Then prepare budgets to effectuate these plans. Then budgets become simply the standard of dollars needed to do the job.

Control

Establish the meaning of control, and then put it into practice. In particular this requires the manager of each department to establish his own budget, based on his understanding of the job to be done. Having done this, he is responsible for planned performance. If it becomes necessary to exceed the budget, it should be discussed with superiors and asked for in advance. A budget is neither to be considered sacred nor to be taken lightly. Managers will respond with better attitudes when they understand that the use of the budget is to permit them to control their own operations.

Accounting

A good, easily understood accounting system with complete, simple, and prompt explanation of the content of the items is required for managerial use. This requires an accounting staff that is more concerned with the operating facts than with the techniques of balancing the books. Extreme care should be devoted to seeing that no supervisor has in his budget any item over which he does not have control.

Motivation

Establish a budget system on the highest possible level of motivation. The mechanics of planning and control must be clearly distinguished from the motivation of individuals. The success of an organization largely depends on the ability of the management group to plan effectively and to work with and lead, as well as direct, individuals to execute the plan effectively. Effective execution depends on sound control procedures and the ability of management to motivate individuals to regulate operations constantly toward the goals outlined in the plan.

When the attitudes of individuals toward each other are generous, understanding, and based on mutual respect, any technique adopted by management to further effective performance is apt to be successful. These essential attitudes can only be fostered in an atmosphere in which courageous and skillful leadership is present and where people enjoy the secure feeling that stems from impartial authority exercised from the top.

Future Oriented

In order for budgeting to be an important tool for management, it is necessary that the system be future oriented. Information about the past is useful only if it can be used as a basis for establishing future plans. Budgeting is a powerful technique for performance evaluation. But it is necessary to realize that information on past or historical variances (between budget and actual) is useful only in so far as it can be used to make future decisions. Management needs an indication of when conditions have changed and it also

needs data to help anticipate change. Variances which are produced in the budgetary process provide a set of signals which can be used to indicate the extent of change that has taken place. This information will be vital to management in planning for the future. Management control systems must be structured so as to exploit the information feedback aspect of budgeting. If this is done, the budgetary process can be viewed as an accounting for the future.

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